Allied Telesis

Using AlliedWare Plus™

How To | Get Started With The AlliedWare Plus™ Operating System

Introduction

This How To Note introduces a number of commonly-used management features of the AlliedWare Plus™ operating system (OS), the next generation operating system for Allied Telesis, Inc's high performance layer 3 managed switches.

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Related How To Notes

You also may find the following AlliedWare Plus How To Notes useful:

- *How To Configure Basic Switching Functionality With The AlliedWare Plus™ Operating System*
- *How To Configure EPSR (Ethernet Protection Switching Ring) to Protect a Ring from Loops*

Which products and software version does it apply to?

This How To Note applies to the following Allied Telesis switches, running AlliedWare Plus OS software version 5.2.1 or later:

- SwitchBlade x8100 switch and SwitchBlade x908 switch
- x510, x610, x600 and x900 series switches

Important differences between the AlliedWare OS and the AlliedWare Plus OS

The most noticeable differences between the AlliedWare Plus OS and the AlliedWare OS are:

- **The command mode hierarchy.** With the AlliedWare Plus OS, you go into an appropriate mode before entering configuration or monitoring commands.

  For details of the modes, see "How to work with command modes" on page 9.

- **The style of the commands.** Because you go into a configuration mode, the AlliedWare Plus OS already knows that you are entering a configuration command. Therefore, you do not have to begin commands with keywords like **create**. This means that many commands are shorter.

- **How the switch identifies values in commands.** The AlliedWare Plus OS either has parameter keywords immediately followed by a space and their value (for an example, see "How to add and remove users" on page 28), or simply has a series of space-separated values (for an example, see "How to set the time and date" on page 25). For many commands, you must enter the values in the correct order. The ? help makes this easy by prompting you for values one at a time.

- **How to undo an action or remove a setting.** Mostly you remove settings by re-entering the configuration command with the keyword **no** before it. See "How to undo settings" on page 30.

- **The things the command line warns you about.** In the AlliedWare Plus OS:

  - If you try to create an object (such as a user, trigger etc) and an object with that name already exists, the switch overwrites the original object. It does **not** warn you before doing so.

    The file copying commands are an example of an exception to this—the switch asks if you want to overwrite the file.

  - You only get a message telling you that an operation failed, not if it succeeds. If the switch does not display an error message, you can assume the command was successful.

- **Port numbering**. In the AlliedWare Plus OS, switch ports are named port*x.y.z* (e.g. port1.0.1), where:

  - the first number (*x*) is the stack ID number
  - the second number (*y*) is the module number (0 for base ports and higher numbers for XEMs)
  - the third number (*z*) is the port number.

- **Associating VLANs with switch ports.** In the AlliedWare Plus OS, VLANs are configured as an attribute of switch ports. To associate a VLAN with a port, you enter Interface Configuration mode for the port, not for the VLAN. For details and examples, see *How To Configure Basic Switching Functionality With the AlliedWare Plus Operating System*.

- **Flash compaction.** In the AlliedWare Plus OS, Flash compaction takes up to a minute. The command line is unresponsive during this time. Do not power cycle the switch during Flash compaction.

How to log in

1. Set the console baud rate

Set the baud rate of your terminal emulator to 115200.

For bootloader version 1.0.8 and earlier, this is the switch's default value. You can use a bootloader menu option to change it, but the first time you access the switch, you must use 115200.

Note that in bootloader version 1.0.9, the default baud rate will change to 9600.

2. Login with manager/friend

Like in AlliedWare, the defaults are:

```
username: manager
password: friend
```

The switch logs you into User Exec mode. From User Exec mode, you can perform high-level diagnostics (some **show** commands, ping, traceroute etc), start sessions (Telnet, SSH), and change mode.

How to get command help

The following kinds of command help are available:

- lists of valid parameters with brief descriptions (the ? key)
- completion of keywords (the Tab key)
- error messages for incomplete or incorrect syntax

▶ View a list of valid parameters

To get syntax help, type ? after:

- the prompt, to list all commands available in the mode you are in
- one or more parameters, to list parameters that can come next in the partial command
- one or more letters of a parameter, to list matching parameters

Tip:
The AlliedWare Plus OS only displays one screenful of text at a time, with the prompt "--More--" at the end of each screenful. Press the space bar to display the next screenful or the Q key to return to the command prompt.

Example To see which commands are available in User Exec mode, enter "?" at the User Exec mode command prompt:

```
awplus>?
```

This results in the following output:

```
Exec commands:
  clear            Reset functions
  disable          Turn off privileged mode command
  echo             Echo a string
  enable           Turn on privileged mode command
  exit             End current mode and down to previous mode
  help             Description of the interactive help system
  logout           Exit from the EXEC
  mstat            Show statistics after multiple multicast traceroutes
  mtrace           Trace multicast path from source to destination
  ping             Send echo messages
  quit             Exit current mode and down to previous mode
  remote-command   Remote stack member command execution
  show             Show running system information
  ssh              Open an SSH connection
  telnet           Open a telnet connection
  terminal         Set terminal line parameters
  traceroute       Trace route to destination
```

Example To see which **show** commands that start with "i" are available in User Exec mode, enter "?" after **show i**:

```
awplus>show i?
```

This results in the following output:

```
  interface  Interface information
  ip         Internet Protocol (IP)
  ipv6       Internet Protocol version 6 (IPv6)
```

Example To use the ? help to work out the syntax for the **clock timezone** command (page 26), enter the following sequence of commands:

```
awplus(config)#clock ?
  summer-time  Manage summer-time
  timezone     Set clock timezone

awplus(config)#clock timezone ?
  TIMEZONE  Timezone name, up to 6 characters

awplus(config)#clock timezone NZST ?
  minus  negative offset (West of Greenwich)
  plus   positive offset (East of Greenwich)

awplus(config)#clock timezone NZST plus ?
  OFFSET  Time zone offset to UTC in HH or HH:MM format

awplus(config)#clock timezone NZST plus 12
```

The above example demonstrates that the ? help only indicates what you can type **next**. For commands that have a series of parameters, like **clock timezone**, the ? help does not make the number of parameters obvious.

▶ Complete keywords

To complete keywords, type Tab after part of the command.

If only one keyword matches the partial command, the AlliedWare Plus OS fills in that keyword. If multiple keywords match, it lists them.

Example To use Tab completion to enter the command **show ip dhcp server summary**, enter the following commands. We have included "<Tab>" to show where to type the Tab key—it is not displayed on screen.

```
awplus>show ip <Tab>
as-path-access-list  bgp                  community-list
dhcp                 dhcp-relay           domain-list
domain-name          extcommunity-list    filter
forwarding           igmp                 interface
irdp                 mroute               mvif
name-server          nat                  ospf
pim                  protocols            rip
route                rpf

awplus>show ip d<Tab>
dhcp         dhcp-relay   domain-list  domain-name

awplus>show ip dhcp <Tab>
binding  pool     server

awplus>show ip dhcp server s<Tab>
statistics  summary

awplus>show ip dhcp server su<Tab>mmary
```

▶ View command messages

The switch displays the following generic error messages about command input:

% Incomplete command—this message indicates that the command requires more parameters. Use the ? help to find out what other parameters are available.

```
awplus(config)#interface
interface
% Incomplete command.
```

% Invalid input detected at '^' marker—this indicates that the switch could not process the command you entered. The switch also prints the command and marks the first invalid character by putting a '^' under it. Note that you may get this error if you enter a command in the wrong mode, as the following output shows.

```
awplus#interface port1.0.1
interface port1.0.1
 ^
% Invalid input detected at '^' marker.
```

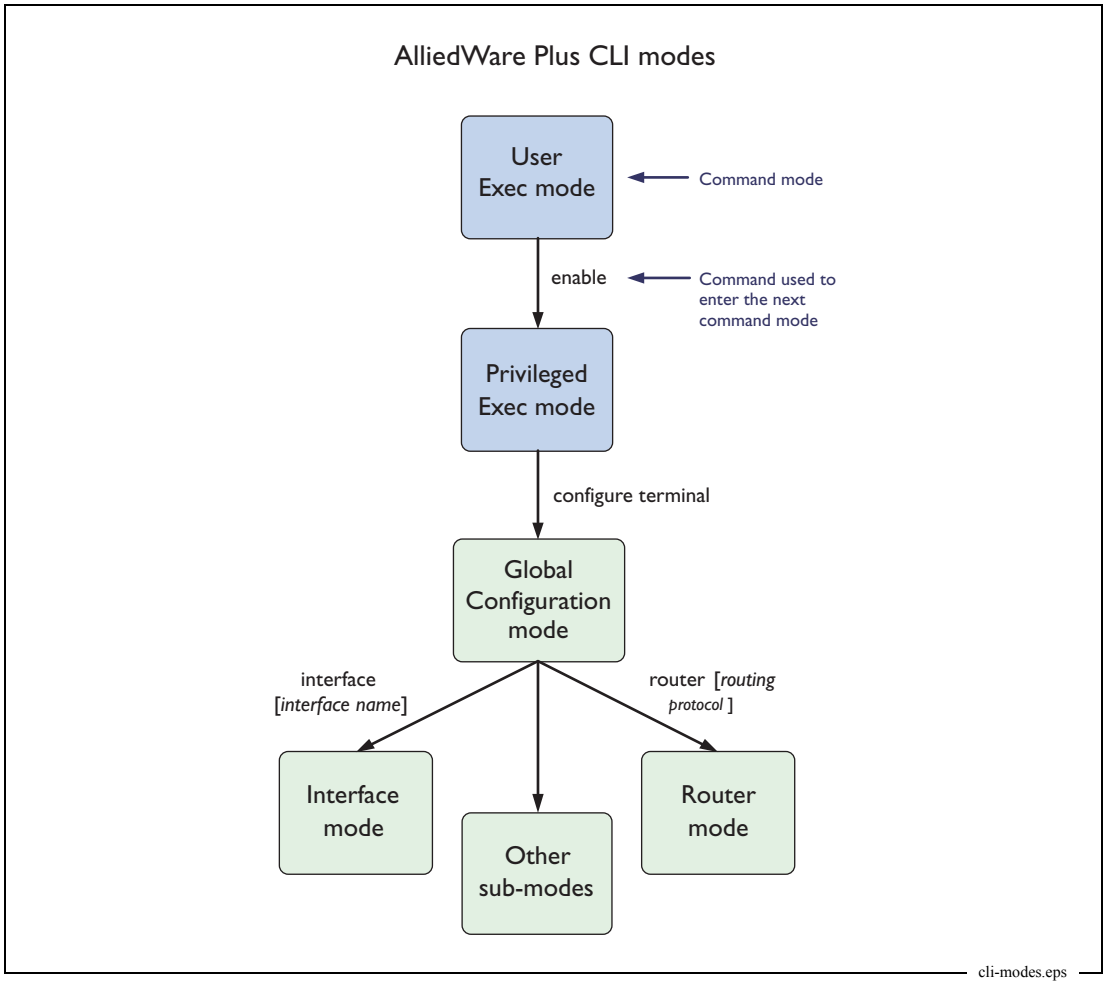
% Unrecognized command—when you try to use ? help and get this message, it indicates that the switch can not provide help on the command because it does not recognise it. This means the command does not exist, or that you have entered it in the wrong mode, as the following output shows.

```
awplus#interface ?
% Unrecognized command
```

The AlliedWare Plus OS does not tell you when commands are successful. If it does not display an error message, you can assume the command was successful.

How to work with command modes

The following figure shows the command mode hierarchy and the commands to use to move to lower-level modes.



▶ User Exec mode

User Exec mode is the mode you log into on the switch.

It lets you perform high-level diagnostics (**show** commands, ping, traceroute etc), start sessions (Telnet, SSH), and change mode.

For a list of commands available in this mode, see "User Exec mode" on page 39.

The default User Exec mode prompt is **awplus>**.

▶ Privileged Exec mode

To change from User Exec to Privileged Exec mode, enter the command:

```
awplus>enable
```

Tip:
en is a short-cut for **enable**

Privileged Exec mode is the main mode for monitoring—for example, running **show** commands and debugging. From Privileged Exec mode, you can do all the commands from User Exec mode plus many system commands.

For a list of commands available in this mode, see "Privileged Exec mode" on page 40.

The default Privileged Exec mode prompt is **awplus#**.

▶ Global Configuration mode

To change from Privileged Exec to Global Configuration mode, enter the command:

```
awplus>configure terminal
```

Tip:
conf t is a short-cut for **configure terminal**

From Global Configuration mode, you can configure most aspects of the switch.

For a list of commands available in this mode, see "Global Configuration mode" on page 41.

The default Global Configuration mode prompt is **awplus(config)#**.

▶ Lower-level configuration modes

A number of features are configured by entering a lower-level mode from Global Configuration mode. The following table lists these features.

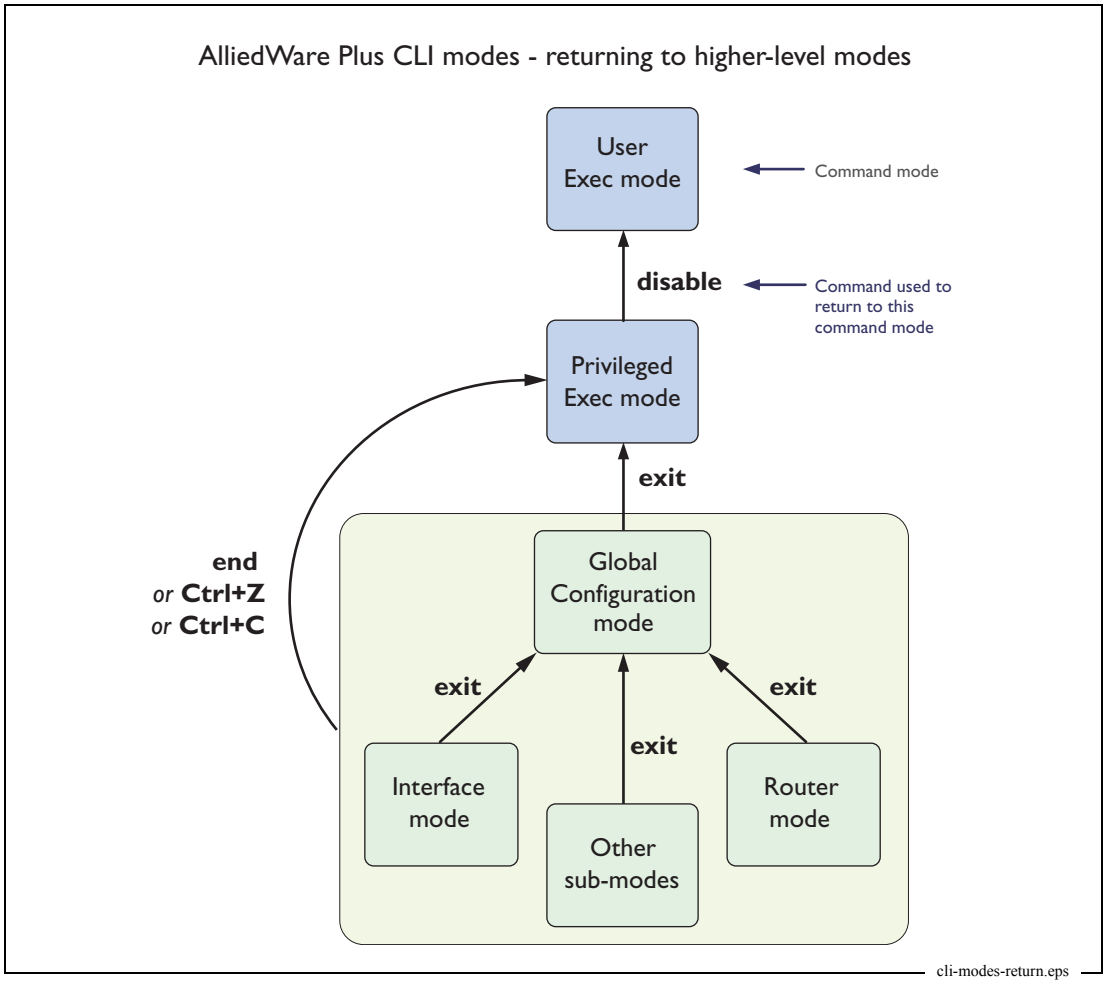
Mode	What it configures	Command	Default prompt
Interface	Switch ports, VLANs, the management Eth port.	interface *name*	awplus(config-if)#
Class map	QoS classes, which isolate and name specific traffic flows (classes) from all other traffic.	(first enable QoS globally with mls qos enable) class-map *name*	awplus(config-cmap)#
EPSR	Ethernet Protection Switching Ring, a loop protection mechanism with extremely fast convergence times.	epsr configuration	awplus(config-epsr)#
Line	Console port settings or virtual terminal settings for telnet.	line console 0 line vty *number*	awplus(config-line)#
Ping poll	Ping polling, which checks whether specified devices are reachable or not.	ping-poll *number*	awplus(config-ping-poll)#
Policy map	QoS policies, a collection of user-defined QoS classes and the default class.	(first enable QoS globally with mls qos enable) policy-map *name*	awplus(config-pmap)#
Policy map class	The QoS actions to take on a class-map, and which class-maps to associate with a QoS policy. This mode is a sub-mode of Policy map mode.	(in Policy map mode) class *name*	awplus(config-pmap-c)#
Route map	Route maps, which select routes to include or exclude from the switch's routing table and/or route advertisements.	route-map *name* deny|permit *entry-number*	awplus(config-route-map)#
Router	Routing using BGP, IP, IPv6, OSPF, RIP, or VRRP.	router *protocol other-parameters*	awplus(config-router)#
MST	Multiple Spanning Tree Protocol.	spanning-tree mst configuration	awplus(config-mst)#
Trigger	Triggers, which run configuration scripts in response to events.	trigger *number*	awplus(config-trigger)#
VLAN database	VLANs.	vlan database	awplus(config-vlan)#

Some protocols have commands in both Global Configuration mode and lower-level configuration modes. For example, to configure MSTP, you use:

- Global Configuration mode to select MSTP as the spanning tree mode
- MST mode to create instances and specify other MSTP settings
- Interface Configuration mode to associate the instances with the appropriate ports.

Returning to higher-level modes

The following figure shows the commands to use to move from a lower-level mode to a higher-level mode.



Examples To go from Interface Configuration to Global Configuration mode:

```
awplus(config-if)#exit
awplus(config)#
```

To go from Interface Configuration to Privileged Exec:

```
awplus(config-if)#end
awplus#
```

To go from Privileged Exec to User Exec:

```
awplus#disable
awplus>
```

▶ Entering Privileged Exec commands when in a configuration mode

When you are configuring the switch, you are likely to want to enter **show** commands to confirm the configuration. This can mean you change often between configuration modes and Privileged Exec mode.

However, you can run Privileged Exec commands without changing mode, by using the command:

```
do <command you want to run>
```

However, you cannot use the ? help to find out command syntax when using the **do** command.

Example To display information about the IP interfaces when in Global Configuration mode, enter the command:

```
awplus(config)#do show ip int brief
```

This results in the following output:

```
Interface              IP-Address      Status          Protocol
eth0                   172.28.8.200    admin up        running
vlan1                  unassigned      admin up        running
.
.
.
```

How to see the current configuration

The current configuration is called the running-config. To see it, enter the following command in either Privileged Exec mode or any configuration mode:

```
awplus#show running-config
```

Tip:
show running-config works in all modes except User Exec mode.

To see only part of the current configuration, enter the command:

```
awplus#show running-config |include <word>
```

This displays only the lines that contain *word*.

To start the display at a particular place, enter the command:

```
awplus#show running-config |begin <word>
```

This searches the running-config for the first instance of *word* and begins the display with that line.

Default settings

When the switch first starts up with the AlliedWare Plus OS, it applies default settings and copies these defaults dynamically into its running-config.

These default settings mean that the AlliedWare Plus OS:

- encrypts passwords, such as user passwords
- records log message priority in log messages
- turns on jumbo frame support for all ports
- turns on the telnet server so that you can telnet to the switch
- enables the switch to look up domain names (but for domain name lookups to work, you have to configure a DNS server)
- turns off L3 multicast packet switching in the switch's hardware. This prevents L3 multicasts from flooding the switch's CPU in its default state as an L2 switch
- sets the maximum number of ECMP routes to 8
- turns on RSTP on all ports. Note that the ports are not set to be edge ports
- sets all the switch ports to access mode. This means they are untagged ports, suitable for connecting to hosts
- creates VLAN 1 and adds all the switch ports to it
- allows logins on the serial console port
- allows logins on VTY sessions (for telnet etc)
- has switching enabled, so layer 2 traffic is forwarded appropriately without further configuration
- allocates all the routing table memory space to IPv4 routes (instead of IPv6 routes)
- has ports set to autonegotiate their speed and duplex mode
- has copper ports set to auto MDI/MDI-X mode
- has all switch ports attached to VLAN 1

The default settings

Most of the above default settings are in the form of commands, which the switch copies to its running-config when it first boots up.

The switch stores a copy of the default configuration commands in the running and startup configs and uses that file as its default start-up file.

For more information about start-up files, see "How to save and boot from the current configuration" on page 18.

The following figure shows the contents of the default file.

Contents of default settings	Description
`!`	An empty comment line (comments begin with an !).
`service password-encryption` `!`	Forces passwords in the script to be encrypted.
`log record-priority`	Records log message priority.
`username manager privilege 15 password 8 $1$bJoVec4D$JwOJGPr7YqoExA0GVasdE0`	Specifies the password for the manager user
`service telnet` `!`	Turns on the telnet server.
`ip domain-lookup` `!`	Allows domain name lookups.
`no ip multicast-routing` `!`	Turns off L3 multicast packet switching in the switch hardware.
`maximum-paths 8`	Sets maximum number of ECMP routes.
`spanning-tree mode rstp` `!`	Turns on RSTP.
`interface eth0` `!`	A heading for any configuration settings for the management eth0 port. There are no eth0 settings.

`interface port1.0.1-1.0.24`
`switchport`
`switchport mode access`
`!`
	Sets each switch port to access mode.

`interface vlan1` `!`	Creates VLAN 1.
`line con 0`	A heading for any configuration settings for the console port. There are no console port settings.
`line vty 0 32`	A heading for any configuration settings for VTY sessions. There are no VTY session settings.
`!` `end`	

How to change the password

To change the password for the manager account, enter Global Configuration mode and enter the following command:

```
awplus(config)#username manager password <new-password>
```

The password can contain any printable character and is case sensitive.

How to set a management IP address

This section describes how to set an IP address on the eth0 management port.

1. If desired, check the current configuration

After logging in, enter Privileged Exec mode by using the command:

```
awplus>enable
```

Then check the current configuration by using one of the following commands:

```
awplus#show ip interface eth0 brief
```

This results in the following output:

```
Interface              IP-Address      Status          Protocol
eth0                   172.28.8.200    admin up        running
```

```
awplus#show running-config interface eth0
```

This results in the following output:

```
!
interface eth0
 ip address 172.28.8.200/16
!
```

2. Enter Interface Configuration mode for the eth0 interface

Enter Global Configuration mode and enter the command:

```
awplus(config)#interface eth0
```

3. Enter the IP address and mask

Enter the command:

```
awplus(config-if)#ip address <address/mask>
```

For example, to set the address to 172.28.8.210/16, enter the command:

```
awplus(config-if)#ip address 172.28.8.210/16
```

How to save and boot from the current configuration

This section tells you how to save your configuration and run the saved configuration when the switch starts up.

You can either:

- save the configuration to the switch's default configuration file (called "default.cfg"). By default, the switch uses that file at start-up.
- create a new configuration file and set the switch to use the new configuration file at start-up.

How to save to the default configuration file

Enter Privileged Exec mode and enter the command:

```
awplus#copy running-config startup-config
```

The parameter **startup-config** is a short-cut for the current boot configuration file, which will be the default configuration file unless you have changed it, as described in the next section.

How to create and use a new configuration file

1. Copy the current configuration to a new file

Enter Privileged Exec mode and enter the command:

```
awplus#copy running-config <filename>.cfg
```

Example To save the current configuration in a file called example.cfg, enter the command

```
awplus#copy running-config example.cfg
```

2. Set the switch to use the new file at startup

To run the new file's configuration when the switch starts up, enter Global Configuration mode and enter the command:

```
awplus(config)#boot config-file <filename>.cfg
```

Example To run the commands in example.cfg on startup, enter the command

```
awplus(config)#boot config-file example.cfg
```

3. Display the new settings

To see the files that the switch uses at startup, enter Privileged Exec mode and enter the command:

```
awplus#show boot
```

The output looks like this:

```
Boot configuration
-----------------------------------------------------------------
Current software   : r1-5.2.1.rel
Current boot image : flash:/r1-5.2.1.rel
Backup  boot image : Not set
Default boot config: flash:/.configs/default.cfg
Current boot config: flash:/example.cfg (file exists)
```

4. Continue updating the file when you change the configuration

When you next want to save the current configuration, enter Privileged Exec mode and enter the command:

```
awplus#copy running-config startup-config
```

The parameter **startup-config** is a short-cut for the current boot configuration file.

How to return to the factory defaults

The switch dynamically adds the default settings to the running-config at start-up if the default file is not present. This section describes how to use this feature to return to the factory defaults.

Completely restore defaults

To completely remove your configuration and return to the factory default configuration, delete or rename the default file and make sure no other file is set as the start-up configuration file.

To find the location of the default boot configuration file, enter Privileged Exec mode and enter the command:

```
awplus#show boot
```

To delete the default file when it is the current boot configuration file, enter Privileged Exec mode and enter either of the commands:

```
awplus#delete force <filename>
```

or:

```
awplus#erase startup-config
```

Caution: Erasing startup-config deletes the current boot configuration file—it does not simply stop the file from being the boot file.

To make sure that no other file is loaded at start-up, enter Global Configuration mode and enter the command:

```
awplus(config)#no boot config-file
```

Partially restore defaults

To partially restore the default settings, make a configuration file that contains the settings you want to keep and set this as the start-up configuration file. On start-up, the switch will add the missing settings to the running-config.

For example, to use default settings but still keep an IP address on the eth0 management port, create a file like the following one and set it as the boot configuration file:

```
awplus#show file eth0-ip.cfg
!
interface eth0
 ip address 172.28.8.210/16
!
ip route 0.0.0.0/0 172.28.0.1
!
end
```

How to see system information

This section describes how to view the following system information:

- overview information
- details of temperature and voltage
- serial number

▶ Viewing overall system information

To display an overview of the switch hardware, software, and system settings, enter User Exec or Privileged Exec mode and enter the command:

```
awplus#show system
```

The output looks like this:

```
Switch System Status                                    Tue Jun 12 16:41:17 2007

Board       ID  Bay   Board Name                                Rev  Serial number
-------------------------------------------------------------------------------
Base       270        x900-24XT                                 C-0  P1FY7502C
PSU        212  PSU1  AT-PWR01-AC                               F-1  4221F7E
Fan module 214  PSU2  AT-FAN01                                  F-1  422177F
-------------------------------------------------------------------------------
Memory:   DRAM: 514472 kB   Flash: 31.0MB Used: 25.0MB Available: 6.0MB
-------------------------------------------------------------------------------
Environment Status: Normal
Uptime: 0 days 00:08:48


Bootloader version : 1.0.8
Current software   : r1-5.2.1-rc3.rel
Software version   : 5.2.1 rc3
Build date         : Mon Jul 9 11:31:09 NZST 2007

Current boot config: flash:/.configs/default.cfg (file exists)
Territory          : europe

System Name

System Contact

System Location
```

▶ Viewing temperature, voltage, and fan status

The switch monitors the environmental status of the switch and its power supplies and fan. To display this information, enter User Exec or Privileged Exec mode and enter the command:

```
awplus#show system environment
```

The output looks like the following figure. This device has a power supply unit in the first PSU bay and a fan in the second PSU bay.

```
Environment Monitoring Status
Overall Status: Normal

Resource ID: 1  Name: PSU bay 1
ID  Sensor (Units)                     Reading  Low Limit High Limit Status
1   Device Present                           1          -          -      Ok
2   PSU Overtemp                             0          -          -      Ok
3   PSU Fan Fail                             0          -          -      Ok
4   PSU Power Good                           1          -          -      Ok

Resource ID: 2  Name: PSU bay 2
ID  Sensor (Units)                     Reading  Low Limit High Limit Status
1   Device Present                           1          -          -      Ok
2   PSU Overtemp                             0          -          -      Ok
3   PSU Fan Fail                             0          -          -      Ok
4   PSU Power Good                           0          -          -      Ok

Resource ID: 3  Name: x900-24XT
ID  Sensor (Units)                     Reading  Low Limit High Limit Status
1   Voltage: 2.5V (Volts)                2.578      2.344      2.865     Ok
2   Voltage: 1.65V (Volts)               1.629      1.488      1.816     Ok
3   Voltage: 3.3V (Volts)                3.352      2.973      3.627     Ok
4   Voltage: 1.8V (Volts)                1.797      1.615      1.979     Ok
5   Voltage: 12V (Volts)                11.938     10.813     13.188     Ok
6   Temp: Ambient (Degrees C)              25        -127         55      Ok
7   Temp: Sensor chip (Degrees C)          45        -127         75      Ok
8   Temp: Internal (Degrees C)             38        -127         75      Ok
```

▶ Viewing the serial number

The switch's serial number is displayed in the output of the **show system** command, but for convenience, you can also display it by itself. To do this, enter User Exec or Privileged Exec mode and enter the command:

```
awplus#show system serialnumber
```

The output looks like this:

```
P1FY7502C
```

How to set system parameters

You can set system parameters to personalise the switch and make it easy to identify it when troubleshooting. This section describes how to configure the following system parameters:

- telnet session timeout
- switch name
- login banner

How to change the telnet session timeout

By default, telnet sessions time out after 10 minutes of idle time. If desired, you can change this.

To change the timeout for all telnet sessions, enter Global Configuration mode and enter the commands:

```
awplus(config)#line vty 0 32
awplus(config-line)#exec-timeout <new-timeout>
```

The new timeout value only applies to new sessions, not current sessions.

Examples To set the timeout to 30 minutes, enter the command:

```
awplus(config-line)#exec-timeout 30
```

To set the timeout to 30 seconds, enter the command:

```
awplus(config-line)#exec-timeout 0 30
```

To set the timeout to infinity, so that sessions never time out, enter either of the commands:

```
awplus(config-line)#no exec-timeout
awplus(config-line)#exec-timeout 0 0
```

How to name the switch

To give the switch a name, enter Global Configuration mode and enter the command:

```
awplus(config)#hostname <name>
```

For example, to name the switch “switch1.mycompany.com”:

```
awplus(config)#hostname switch1.mycompany.com
```

The prompt displays the new name:

```
switch1.mycompany.com(config)#
```

The name can contain hyphens and underscore characters.

However, the name must be a single word, as the following example shows.

```
awplus(config)#hostname switch1.mycompany.com more words
hostname switch1.mycompany.com more words
                                ^
% Invalid input detected at '^' marker.
```

It also cannot be surrounded by quote marks, as the following example shows.

```
awplus(config)#hostname "switch1.mycompany.com more words"
% Please specify string starting with alphabet
```

Removing the name

To remove the hostname, enter the command:

```
switch1.mycompany.com(config)#no hostname
```

The prompt changes back to the default prompt:

```
awplus(config)#
```

How to display a text banner at login

By default, the switch displays the AlliedWare Plus OS version and build date at login. You can customise this by changing the *Message of the Day* (MOTD) banner.

To enter a new MOTD banner, enter Global Configuration mode and enter the command:

```
awplus(config)#banner motd <banner-text>
```

The text can contain spaces and other printable characters. You do not have to surround words with quote marks.

Example

To display “this is a new banner” when someone logs in, enter the command:

```
awplus(config)#banner motd this is a new banner
```

This results in the following output at login:

```
awplus login: manager
Password:
this is a new banner
awplus>
```

Removing the banner

To return to the default banner (AlliedWare Plus OS version and build date), enter the command:

```
awplus(config)#banner motd default
```

To remove the banner instead of replacing it, enter the command:

```
awplus(config)#no banner motd
```

How to set the time and date

There are three aspects to setting the time and date:

- setting the current time and date ("How to set the time and date" on page 25)
- setting the timezone ("How to set the timezone" on page 26)
- configuring the switch to automatically change the time when summer-time begins and ends ("How to configure summer-time" on page 26)

Instead of manually setting the time, you can use NTP to automatically get the time from another device. This How To Note does not describe NTP—see the “NTP Configuration” and “NTP Commands” chapters of the Software Reference.

How to show current settings

To display the current time, timezone and date, enter Privileged Exec mode and enter the command:

```
awplus#show clock
```

The output looks like this:

```
14:55:14 Thu 24 May 2007
Timezone: UTC+0
```

How to set the time and date

To set the time and date, enter Privileged Exec mode and enter the command:

```
awplus#clock set <hh:mm:ss> <day> <month> <year>
```

where:

- *hh* is two digits giving the hours in 24-hour format (e.g. **14**)
- *mm* is two digits giving the minutes
- *ss* is two digits giving the seconds
- *day* is two digits giving the day of the month
- *month* is the first three letters of the month name (e.g. **sep**)
- *year* is four digits giving the year

How to set the timezone

To set the timezone, enter Global Configuration mode and enter the command:

```
awplus(config)#clock timezone <timezone-name> {plus|minus} 0-12
```

The *timezone-name* can be any string up to 6 characters long.

To return the timezone to UTC+0, enter the command:

```
awplus(config)#no clock timezone
```

Example To set the timezone to Eastern Standard Time, use the command:

```
awplus(config)#clock timezone EST minus 5
```

How to configure summer-time

There are two approaches for setting summer-time:

- **recurring**, when you specify the week when summer-time starts and ends and each year the switch changes the time at those weeks. For example, Eastern Daylight Time (EDT) starts at 2 am on the second Sunday in March and ends at 2 am on the first Sunday in November.
- **date-based**, when you specify the start and end dates for summer-time for a particular year. For example, Eastern Daylight Time (EDT) starts at 2 am on Sunday, 11 March 2007 and ends at 2 am on Sunday, 4 November 2007.

Recurring To set summer-time with recurring dates, enter Global Configuration mode and enter the command:

```
awplus(config)#clock summer-time <zone-name> recurring
               <start-week> <start-day> <start-month> <start-time>
               <end-week> <end-day> <end-month> <end-time>
               <offset-minutes>
```

The *zone-name* can be any string up to 6 characters long.

The *start-time* and *end-time* are in the form *hh:mm*, in 24-hour time.

Note that if you specify 5 for the week, this changes the time on the last day of the month, not the 5th week.

For example, to configure EDT, enter the command:

```
awplus(config)#clock summer-time EDT recurring 2 Sun Mar 02:00 1 Sun
               Nov 02:00 60
```

Date-based To set summer-time for a single year, enter Global Configuration mode and enter the command:

```
awplus(config)#clock summer-time <zone-name> date
               <start-day> <start-month> <start-month> <start-time>
               <end-day> <end-month> <end-week> <end-time>
               <offset-minutes>
```

The *zone-name* can be any string up to 6 characters long.

The *start-time* and *end-time* are in the form *hh:mm*, in 24-hour time.

For example, to configure EDT for 2007, enter the command:

```
awplus(config)#clock summer-time EDT date 11 Mar 2007 02:00 4 Nov
               2007 02:00 60
```

How to add and remove users

Adding users

To add a new user with administrative rights, enter Global Configuration mode and enter the command:

```
awplus(config)#username <name> privilege 15 password <password>
```

Both *name* and *password* can contain any printable character and are case sensitive.

The AlliedWare Plus OS gives you a choice of 1 or 15 for the privilege level. Level 1 users are limited to User Exec mode so you need to set most users to level 15.

For example, to add user Bob with password 123$%^, enter the command:

```
awplus(config)#username Bob privilege 15 password 123$%^
```

Removing users

To remove a user, enter Global Configuration mode and enter the command:

```
awplus(config)#no username <name>
```

For example, to remove user Bob, enter the command:

```
awplus(config)#no username Bob
```

You can delete any user except the user called “manager”, including the user you are currently logged in as.

Displaying users

To list the currently logged-in users, enter User Exec or Privileged Exec mode and enter the command:

```
awplus#show users
```

The output looks like this:

```
  Line      User                Host(s)             Idle       Location
130 vty 0   manager             idle                01:36:37   10.33.27.11
131 vty 1   Bob                 idle                00:00:00   10.33.22.13
```

To list all configured users, enter User Exec or Privileged Exec mode and enter the command:

```
awplus#show running-config |include username
```

The output looks like this:

```
username manager privilege 15 password 8 $1$bJoVec4D$JwOJGPr7YqoExA0GVasdE0
username Bob privilege 15 password 8 $1$gXJLY8dw$iqkMXLgQxbzSOutNUa5E2.
```

Pre-encrypted passwords

The running-config output above includes the number 8 after the **password** parameter. This indicates that the password is displayed in its encrypted form.

You can enter the number 8 and a pre-encrypted password on the command line. You may want to pre-encrypt passwords if you need to load them onto switches via an insecure method (such as HTTP, or by emailing them to remote users).

Caution: Only enter the number 8 if you are entering a pre-encrypted password—otherwise, you will be unable to log in using the password and will be unable to access the switch through that username. The next section describes why.

Testing this feature

If you want to test the effect of this, **create a new user** for the test instead of using the manager user. The test stops you from logging in as the test user, so you need to have the manager user available to log in as.

The following output shows how specifying the number 8 puts the password into the running-config exactly as you typed it:

```
awplus(config)#username Bob privilege 15 password 8 friend
awplus(config)#show running-config |include username Bob
username Bob privilege 15 password 8 friend
```

After entering the command above, logging in as “Bob” with a password of “friend” does not work. This is because the switch takes the password you enter (“friend”), hashes it, and compares the hash with the string in the running-config (“friend”). The hashed value and “friend” are not the same, so the switch rejects the login.

How to undo settings

There are two possibilities for undoing settings: the **no** parameter and the **default** parameter.

How to use the *no* parameter

To undo most settings, simply re-enter the first parameters of the configuration command with the parameter **no** before them.

Example You can set the timezone to Eastern Standard Time by entering the command:

```
awplus(config)#clock timezone EST minus 5
```

To remove the timezone setting, enter the command:

```
awplus(config)#no clock timezone
```

How to use the *default* parameter

Some commands have a **default** parameter that returns the feature to its default setting.

Example You can change the login banner to “this is a new banner” by entering the command:

```
awplus(config)#banner motd this is a new banner
```

To return to the default banner, enter the command:

```
awplus(config)#banner motd default
```

Note that this command also has a **no** parameter that lets you remove the banner altogether.

How to work with files

The AlliedWare Plus OS lets you create directory trees for file storage. This section shows:

- "How to list files" on page 31—listing files and seeing how much free space you have
- "How to navigate through the file system" on page 33—identifying the current directory, changing directories, and creating and deleting directories
- "How to copy files" on page 35—copying within Flash memory, to and from NVS and SD card, and to and from a TFTP server
- "How to use the editor" on page 37

How to list files

▶ Listing files

To list files, enter Privileged Exec mode and enter the command:

```
awplus#dir
```

The output lists files and directories in order of modification date, descending. It looks like this:

```
-rw-       534 Jul 12 2007 17:52:50  stp.cfg
-rw-       534 Jul 12 2007 17:12:50  example.cfg
-rw- 12429011 Jul 12 2007 16:26:06  r1-5.2.1-rc3.rel
```

▶ Listing files including hidden system files

The **dir** command does not list all files—it hides system files and directories because users generally do not need to create or edit them. To list all files including system files, enter Privileged Exec mode and enter the command:

```
awplus#dir all
```

The output looks like this:

```
drwx         0 Jul 12 2007 17:16:32  ./
-rw-       401 Jul 12 2007 17:16:32  example.cfg
-rw-       534 Jul 12 2007 17:52:50  stp.cfg
-rw- 12429011 Jul 12 2007 16:26:06  r1-5.2.1-rc3.rel
drwx       216 Jul  9 2007 11:31:18  ../
drwx         0 Jun 13 2007 04:31:51  .configs/
-rw-        17 Jun 13 2007 04:27:27  .release
-rw-         9 Jun 12 2007 23:09:19  .ash_history
drwx         0 Jul 10 1977 23:40:00  .ssh/
```

The hidden files and directories begin with a dot.

▶ Seeing information about the file system

To display information about the different memory types on the switch, enter Privileged Exec mode and enter the command:

```
awplus#show file systems
```

The output includes the amount of free memory and the prefix you type to access that memory type, and looks like this:

```
 Size(b)   Free(b)   Type    Flags  Prefixes    S/D/V    Lcl/Ntwk  Avail
-----------------------------------------------------------------------
  31.0M      6.0M    flash     rw   flash:      static   local      Y
     -         -     system    rw   system:     virtual  local      -
 499.0k    444.0k   nvs       rw   nvs:        static   local      Y
     -         -     sdcard    rw   card:       dynamic  local      N
     -         -     tftp      rw   tftp:       -        network    -
     -         -     scp       rw   scp:        -        network    -
     -         -     sftp      ro   sftp:       -        network    -
     -         -     http      ro   http:       -        network    -
```

▶ Listing files in a subdirectory

To list the contents of a directory, enter Privileged Exec mode and enter the command:

```
awplus#dir <directory-name>
```

Tip:
You can specify the directory with or without a / after the directory name.

Example To display the contents of a directory called "example", enter the command:

```
awplus#dir example
```

▶ Listing files in NVS memory or on an SD card

To list the contents of a directory in NVS, enter Privileged Exec mode and enter the command:

```
awplus#dir nvs:<directory-name>
```

To list the contents of a directory on an SD card, enter the command:

```
awplus#dir card:<directory-name>
```

Example To display the contents of a directory in NVS called "example", enter the command:

```
awplus#dir nvs:example
```

How to display the contents of configuration and text files

To display the contents of a file, enter Privileged Exec mode and enter the command:

```
awplus#show file <filename>
```

Example To display the contents of the file called “example.cfg”, enter the command:

```
awplus#show file example.cfg
```

How to navigate through the file system

▶ Showing the current directory

To see which directory you are currently in, enter Privileged Exec mode and enter the command:

```
awplus#pwd
```

For the top-level directory, the output looks like this:

```
flash:
```

▶ Changing directories

To change to another directory, enter Privileged Exec mode and enter the command:

```
awplus#cd <directory-name>
```

To go to a directory one level higher in the directory tree, enter the command:

```
awplus#cd ..
```

Example To change to a directory called “example”, enter the command:

```
awplus#cd example
```

To go up one level, which returns you to the top level directory, enter the command:

```
awplus#cd ..
```

▶ Changing to a directory in NVS memory or on an SD card

To change to the top-level directory in the NVS memory file system, enter Privileged Exec mode and enter the command:

```
awplus#cd nvs:
```

To change to the top-level directory on an SD card, enter the command:

```
awplus#cd card:
```

Note that the prefix for the SD card is “card” not “sdcard”.

Next, you can change to other directories in NVS memory or on the SD card, by entering the command:

```
awplus#cd <directory-name>
```

Alternatively, you can go straight from Flash to a subdirectory in the alternative file system, by entering one of the commands:

```
awplus#cd nvs:<directory-name>
awplus#cd card:<directory-name>
```

To return to the Flash file system, enter the command:

```
awplus#cd flash:
```

Example To change to the directory within NVS called “example”, enter the command:

```
awplus#cd nvs:example
```

To go up one level, which returns you to the top-level directory of NVS memory, enter the command:

```
awplus#cd ..
```

▶ Creating new directories

To create a directory, enter Privileged Exec mode and enter the command:

```
awplus#mkdir <directory-name>
```

Example To make a directory called “example” within the Flash file system, enter the command:

```
awplus#mkdir example
```

▶ Deleting directories

To delete an empty directory, enter Privileged Exec mode and enter the command:

```
awplus#rmdir <directory-name>
```

To delete a directory and all its contents, enter Privileged Exec mode and enter the command:

```
awplus#delete recursive <directory-name>
```

The switch prompts you for confirmation.

Example To delete an empty directory called “example” from within the Flash file system, enter the command:

```
awplus#rmdir example
```

How to copy files

▶ Copying within a file system

Within a directory

To copy a file within the same directory, enter Privileged Exec mode and enter the command:

```
awplus#copy <source-filename> <destination-filename>
```

If the file already exists, the switch asks whether to overwrite it, with a message like this:

```
Overwrite flash:/example.cfg? (y/n)[n]:
```

To overwrite, press the “y” key then the Enter key.

Between directories

To copy a file to another directory within the same file system, enter the command:

```
awplus#copy <source-filename> <directory-name>/
```

The / after the directory name is required. Otherwise the switch displays an error (“37: Destination file is a directory”).

The switch then prompts you for the destination filename. To give the copy a new name, type the name at the prompt. You can include directory names in the path.

To use the same filename as the original, press the Enter key (do not press the “y” key—that names the copy “y”).

Example

To put a copy of example.cfg into the example directory, enter the command:

```
awplus#copy example.cfg example/
```

The prompt and messages look like this:

```
Enter destination file name [example.cfg]:
Copying from source file, please wait...
Copying to destination file, please wait...
0: Successful operation
```

▶ Copying to and from NVS or SD card

To copy between file systems, you need to specify the file system prefix (nvs: or card:).

For example, to copy from Flash to NVS when your current directory is the top-level Flash directory, enter Privileged Exec mode and enter the command:

```
awplus#copy <source-filename> nvs:
```

The switch prompts you for the filename, as described in the previous section.

To copy from NVS to Flash when your current directory is the top-level Flash directory, enter the command:

```
awplus#copy nvs:<source-filename> <destination-filename>
```

Example To copy the file "example.txt" from the directory in NVS called "example" to the top level of Flash, enter the command:

```
awplus#copy nvs:example/example.txt example.txt
```

▶ Copying to and from a TFTP server

To copy a file from a TFTP server to Flash memory, enter Privileged Exec mode and enter the command:

```
awplus#copy tftp flash
```

The switch prompts you for the:

- TFTP server hostname (you can enter its IP address instead)
- source filename on the TFTP server
- destination filename in Flash on the switch

Tip:
You can specify the server and filename in the command instead of waiting for prompts. Use a format like the following:

copy tftp://172.1.1.1/example.cfg flash

To copy a file from Flash to a TFTP server, enter the command:

```
awplus#copy flash tftp
```

Follow the prompts for source filename, server, and destination filename.

Example To copy example.cfg to the TFTP server at 172.1.1.1, enter the command:

```
awplus#copy flash tftp
```

The prompts, responses, and messages look like this:

```
Enter source file name []:example.cfg
Enter destination host name []:172.1.1.1
Enter destination file name [example.cfg]:
Copying from source file, please wait...
Copying to destination file, please wait...
0: Successful operation
```

How to use the editor

The inbuilt editor is JOE (Joe's Own Editor).

To edit an existing file, enter Privileged Exec mode and enter the command:

```
edit <filename>
```

To open the editor with a empty file, enter the command:

```
edit
```

When you save the new file, you may need to specify the file system to store it on. For Flash, use **flash:*<filename>***.

Using JOE

To format and manipulate text in JOE, you use control-character sequences. The following table summarises a few useful sequences—for details, see: joe-editor.sourceforge.net/manpage.html.

Function	Control-character sequence
Access the help	Ctrl-K-H
Save the file without exiting (for new files, this prompts for a filename)	Ctrl-K-D
Save the file and exit (this prompts for a filename)	Ctrl-K-X
Exit without saving the file	Ctrl-C
Go to the beginning of the file	Ctrl-K-U
Go to the end of the file	Ctrl-K-V
Go up one screenful of text in the file	Ctrl-U
Go down one screenful of text in the file	Ctrl-V
Select a block of text:	
Mark the beginning of the block	Ctrl-K-B
Mark the end of the block	Ctrl-K-K
Copy and paste a selected block of text	Place cursor at destination then enter Ctrl-K-C
Move a selected block of text	Place cursor at destination then enter Ctrl-K-M
Delete a selected block of text	Ctrl-K-Y

How to upgrade the firmware

New releases of the AlliedWare Plus OS become available regularly. Contact your customer support representative for more information.

1. Put the new release onto your TFTP server

2. If necessary, create space in the switch's Flash memory for the new release

Note that you cannot delete the current release file.

3. Copy the new release from your TFTP server onto the switch

Follow the instructions in "Copying to and from a TFTP server" on page 36.

4. Set the switch to boot from the new release

Enter Global Configuration mode and enter the command:

```
awplus(config)#boot system <filename>.rel
```

5. Check the boot settings

Enter Privileged Exec mode and enter the command:

```
awplus#show boot
```

6. Reboot

Enter Privileged Exec mode and enter the command:

```
awplus#reload
```

Appendix: Commands available in each mode

This appendix lists the commands available in the following command modes for software version 5.2.1:

- "User Exec mode" on page 39
- "Privileged Exec mode" on page 40
- "Global Configuration mode" on page 41

User Exec mode

```
awplus>?
Exec commands:
  clear            Reset functions
  disable          Turn off privileged mode command
  echo             Echo a string
  enable           Turn on privileged mode command
  exit             End current mode and down to previous mode
  help             Description of the interactive help system
  logout           Exit from the EXEC
  mstat            Show statistics after multiple multicast traceroutes
  mtrace           Trace multicast path from source to destination
  ping             Send echo messages
  quit             Exit current mode and down to previous mode
  remote-command   Remote stack member command execution
  show             Show running system information
  ssh              Open an SSH connection
  telnet           Open a telnet connection
  terminal         Set terminal line parameters
  traceroute       Trace route to destination
```

Privileged Exec mode

```
awplus#?
Exec commands:
  activate         Activate a script
  cd               Change the current working directory
  clear            Reset functions
  clock            Manage clock
  configure        Enter configuration mode
  copy             Copy from one file to another
  debug            Debugging functions (see also 'undebug')
  delete           Delete a file
  dir              List the files on a filesystem
  disable          Turn off privileged mode command
  dot1x            IEEE 802.1X Port-Based Access Control
  echo             Echo a string
  edit             Text Editor
  enable           Turn on privileged mode command
  erase            Erase the system startup configuration
  exit             End current mode and down to previous mode
  help             Description of the interactive help system
  license          Activate software feature license
  logout           Exit from the EXEC
  mail             Send an email
  mkdir            Make a new directory
  move             Rename or move a file
  mstat            Show statistics after multiple multicast traceroutes
  mtrace           Trace multicast path from source to destination
  no               Negate a command or set its defaults
  ping             Send echo messages
  platform         Configure global settings for the platform asic
  pwd              Print the current working directory
  quit             Exit current mode and down to previous mode
  reboot           Halt and perform a cold restart
  reload           Halt and perform a cold restart
  remote-command   Remote stack member command execution
  restart          Restart routing protocol
  rmdir            Remove a directory
  show             Show running system information
  ssh              Open an SSH connection
  stack            Virtual Chassis Stacking (VCS)
  telnet           Open a telnet connection
  terminal         Set terminal line parameters
  test             Test device functionality
  traceroute       Trace route to destination
  trigger          Automatic scripted responses to device events
  undebug          Disable debugging functions (see also 'debug')
  write            Write running configuration to memory, network, or terminal
```

Global Configuration mode

```
awplus(config)#?
Configure commands:
  access-list           Add an access list entry
  arp                   Address Resolution Protocol (ARP)
  auth-mac              IPI MAC-Based Authentication
  banner                Define a login banner
  bgp                   Border Gateway Protocol (BGP)
  boot                  Boot configuration
  class-map             Class map command
  clock                 Manage clock
  crypto                Security Specific Commands
  debug                 Debugging functions (see also 'undebug')
  default               Restore default settings
  do                    To run exec commands in config mode
  dot1x                 IEEE 802.1X Port-Based Access Control
  enable                Modify enable password parameters
  epsr                  Ethernet Protection Switching Ring (EPSR)
  exception             Configure exception settings
  exit                  End current mode and down to previous mode
  fib                   FIB information
  gvrp                  GARP Vlan Registration Protocol
  help                  Description of the interactive help system
  hostname              Set system's network name
  interface             Select an interface to configure
  ip                    Internet Protocol (IP)
  ipv6                  Internet Protocol version 6 (IPv6)
  key                   Authentication key management
  lacp                  LACP commands
  line                  Configure a terminal line
  log                   Logging control
  mac                   mac address
  mail                  Send an email
  max-fib-routes        Set maximum fib routes number
  max-static-routes     Set maximum static routes number
  maximum-access-list   Maximum access-list entries
  maximum-paths         Set multipath numbers installed to FIB
  mls                   Multi-Layer Switch(L2/L3)
  no                    Negate a command or set its defaults
  ntp                   Configure NTP
  ospf                  Open Shortest Path First (OSPF)
  pam                   Pluggable Authentication Module
  ping-poll             Ping Polling
  platform              Configure global settings for the switch asic
  policy-map            Policy map command
  radius-server         RADIUS server configuration commands
  rip                   Routing Information Protocol (RIP)
  rmon                  Remote Monitoring Protocol (RMON)
  route-map             Create route-map or enter route-map command mode
  router                Enable a routing process
  router-id             Router identifier for this system
--More--
```

```
service                 Modify use of network based services
show                    Show running system information
snmp-server             Manage snmp server
spanning-tree           Spanning tree commands
ssh                     Secure Shell
stack                   Virtual Chassis Stacking (VCS)
system                  System properties
telnet                  Configure telnet
trigger                 Select a trigger to configure
username                Establish User Name Authentication
virtual-server          Virtual-server configuration
vlan                    Configure VLAN parameters
vrrp                    Start VRRP configuration
```

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the solution : the network

North America Headquarters | 19800 North Creek Parkway | Suite 100 | Bothell | WA 98011 | USA | T: +1 800 424 4284 | F: +1 425 481 3895
Asia-Pacific Headquarters | 11 Tai Seng Link | Singapore | 534182 | T: +65 6383 3832 | F: +65 6383 3830
EMEA & CSA Operations | Incheonweg 7 | 1437 EK Rozenburg | The Netherlands | T: +31 20 7950020 | F: +31 20 7950021

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